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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,549	11/02/2001	Masahiko Hirose	04558.035002	5660
22511	7590	12/09/2003	EXAMINER	
ROSENTHAL & OSHA L.L.P.			SORKIN, DAVID L	
1221 MCKINNEY AVENUE			ART UNIT	
SUITE 2800			PAPER NUMBER	
HOUSTON, TX 77010			1723	

DATE MAILED: 12/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/002,549

Applicant(s)

HIROSE, MASAHIKO

Examiner

David L. Sorkin

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/452,731.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07 August 2003 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 4-6 rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (US 4,353,802).

4. Claims 1 and 4-6 are product-by-process claims. It is noted that "The Patent Office bears a lesser burden of proof in making a case of *prima facie* obviousness for product-by-process claims because of their peculiar nature" *In re Fessmann*, 180 USPQ 324, 326 (CCPA 1974).

5. Regarding claims 1 and 6, Hara ('802) discloses a permeable composite reverse osmosis membrane comprising a thin film containing an amino group directly bonded to an aromatic ring (see aniline and derivatives thereof listed under "(1) Monoamines"

below col. 10; the compounds listed under "(4) Aromatic polyamines" in col. 11; and formula II-c where "A₅ represents ... a "phenyl group" as explained in col. 13, lines 7-20) and a microporous structure to support the thin film (see abstract, lines 1-3); wherein the thin film is formed through an interfacial polymerization reaction (see col. 27, lines 54-58) by reacting a polyvinyl alcohol based amine compound having at least two amino groups (see col. 4, line 33 to col. 10, line 22, especially formula I; Formula VIII; col. 22 lines 37 to col. 23 line 4; col. 26, lines 14-15; and col. 40, lines 32-65) with at least one substantially monomeric compound having at least two groups that react with the at least two amino groups on the polyvinyl alcohol based amine compound (see col. 29 line 21 to col. 30 line 19). Testing under the conditions stipulated in claim 1 is not discussed by the reference. It is considered that it would have been obvious to one of ordinary skill in the art to have made the membrane of Hara ('802) have the claim salt rejection and flux properties for the following reason: Throughout the reference Hara ('802) discusses how to vary the salt rejection and flux properties of the membrane to be lesser or greater (see for example col. 13, lines 33-37; col. 27 lines 6-18; col. 28, lines 2-6; and col. 32, lines 30-36). As held in *In re Aller*, 105 USPQ 233,235 (CCPA 1955), "where the general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation". See also *In re Preda*, 159 USPQ 342, 344 (CCPA 1968). Regarding claim 4, the substantially monomeric compound is an acid chloride (see col. 29 line 21 to col. 30 line 19). Regarding claim 5, the substantially monomeric compound is at least one polyfunctional acid halide compound selected from the group consisting of aromatic,

aliphatic, and alicyclic polyfunctional acid halide compounds (see col. 28 line 26 to col. 32 line 29).

6. Claims 1 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (US 4,353,802) in view of Hirose et al. (US 5,576,057). While it is considered that the subject matter claims 1 and 4-6 would have been obvious to one of ordinary skill over Hara ('802) taken alone as discussed above, the teachings of Hirose ('057) make the obviousness of selecting a particular salt rejection and flux, such as a salt rejection of less than 80% and flux of $> 1.0 \text{ m}^3/\text{m}^2\text{d}$, all-the-more apparent. Hirose ('057) explains that by varying proportions of water and ethanol in an amine solution, salt rejection and flux may be varied. See Table I where a salt rejection of 10% and flux of $41 \text{ m}^3/\text{m}^2\text{d}$ is disclosed.

Response to Arguments

7. Applicant argues that Hara ('802) teaches away from a salt rejection of 80% or less, and that therefor the claims should be allowed. However, one of ordinary skill in the art would understand the reference as teaching that various membranes properties are desirable in various situations. Columns 13 and 14 discuss various "viewpoint[s]" of constructing membranes, including "a viewpoint that it is useful to obtain the membrane with a higher salt rejection" and "a view point that it is useful to obtain the membrane with a higher water flux". One of ordinary skill in the art would understand the trade-off between higher salt rejection vs. higher water flux. The reference recognizes this tradeoff in column 27, lines 6-18. One of ordinary skill in the art would therefor understand the discussion of "a view point that it is useful to obtain the membrane with

Art Unit: 1723

a higher water flux" as meaning a lower salt rejection. It is also noted that, as held in *In re Geisler* 43 USPQ2d 1362, 1366 (Fed. Cir. 1997), some degree of teaching away in a prior art reference does not necessarily overcome a *prima facie* case of obviousness.

8. Applicant makes inaccurate assertions concerning Hirose (US 5,576,057). Contrary to applicant's assertion, the non-aqueous solution discussed by the reference is solely for *making* the membrane and has nothing to do with using or testing the membrane. Table I clearly indicates that the membrane is used/tested in "Aqueous Solution".

9. Applicant states "Hirose does not teach a salt rejection rate of no more than 80%"; however, a salt rejection of 10% is expressly disclosed in table I.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 703-308-1121. The examiner can normally be reached on 9:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 703-308-0457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



David Sorkin